

REMARKS

Claims 1, 3-22, 24-26, and 28-32 are pending in the subject application. By amendment above, Claims 9 and 10 have been canceled, and new Claims 33-38 have been added. Accordingly, Claims 1, 3-8, 11-22, 24-26, and 28-38 are pending and active.

New Claims 33-36 recite that periods of off power are provided between forward power pulses and reverse power pulses. New Claim 37 recites that the apparatus of Claim 29 includes a controller that is operable to control the power supply so that periods of off power exist between pulses of forward plating power and pulses of reverse plating power. New Claim 38 recites that the apparatus of Claim 29 includes a diffusion plate.

By amendment above, independent Claims 1, 24, 25, 26, and 28 have been amended to recite that the second time period is greater than or equal to five seconds. The specification, at page 15, line 3, provides support for the above amendment. Claim 26 has also been amended to remove the inconsistency between the recital of copper ions and metal ions. In addition, dependent Claim 8 has been amended to correct a grammatical error. Dependent Claim 29 has been amended to more clearly recite features of the controller of the claimed apparatus.

Independent Claims 1, 24, 25, 26, and 28 are rejected as being anticipated under 35 U.S.C. § 102(e) by U.S. Patent No. 5,972,192 to Dubin et al. For the following reasons, applicants respectfully traverse this rejection.

As noted above, independent Claims 1, 24, 25, 26, and 28 have been amended to recite that the second time period is "greater than or equal to five seconds." Dubin et al. does not teach or suggest a second time period that is greater than or equal to five seconds. Accordingly, the subject matter of independent Claims 1, 24, 25, and 26 is novel over Dubin et al.

Turning to independent Claim 28, from which Claims 29-31 depend, these claims are novel over Dubin et al. because Dubin et al. does not describe an electroplating apparatus that

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

includes a controller for controlling a power supply so that the power supply provides reverse electroplating power for at least a portion of a second time period that is greater than or equal to five seconds. Furthermore, applicants direct the Examiner's attention to new Claim 38 which recites that the electroplating apparatus of Claim 28 further comprises a diffuser plate positioned between the anode and a location of the workpiece when the workpiece is received by the reactor. Dubin et al does not teach or suggest such a diffuser plate and for this additional reason, the subject matter of new Claim 38 is novel and nonobvious over Dubin et al.

New Claims 33-37 define novel and nonobvious subject matter over Dubin et al. because Dubin et al. does not teach or suggest "periods of off power" between pulses of forward power and pulses of reverse power during a second time period.

For the foregoing reasons, the subject matter of independent Claims 1, 24, 25, 26, and 28 is novel and non-obvious over Dubin et al. In view of the dependence of dependent Claims 3-5, 8, 13-16, 18, 20, 22, 24-26, and 28-38 from independent Claims 1, 24, 25, and 28, the subject matter of the dependent claims is also novel and non-obvious over Dubin et al.

Claims 28-31 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,396,467 to Anthony. For the following reasons, applicants respectfully traverse this rejection.

Independent Claim 28 has been amended to recite that the electroplating apparatus includes a controller for controlling the power supply to supply reverse plating power for at least a portion of a second time period that is greater than or equal to five seconds. Independent Claim 28 and Claims 29-31 are novel over Anthony for at least this reason. The Examiner's Action asserts that the manner of operating a device does not differentiate an apparatus claim from the prior art, citing MPEP § 2114. Applicants assert that the Examiner has failed to recognize that independent Claim 28 and the claims that depend therefrom expressly recite

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

structure, i.e., a controller for controlling a power supply in a certain manner that is not disclosed or suggested by Anthony. Accordingly, applicants assert that such structural limitations should be considered and renders Claim 28 novel and nonobvious over Anthony. In addition, applicants direct the Examiner's attention to new Claim 37 which further defines the controller as controlling the power supply so that periods of off power exist between the pulses of forward plating power and the pulses of reverse plating power. Applicants also direct the Examiner's attention to new Claim 38 which recites that the claimed electroplating apparatus includes a diffuser plate between the anode and the workpiece when the workpiece is received within the reactor. New Claims 37 and 38 define additional features of the claimed apparatus that are novel and nonobvious over Anthony. For the foregoing reasons, the subject matter of Claims 28-31 and new Claims 37 and 38 are novel and nonobvious over Anthony.

Claims 6, 7, and 9-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. For the following reasons, applicants respectfully traverse this rejection.

Dependent Claims 9 and 10 have been canceled above, and accordingly, the rejection of these claims is moot. With respect to remaining Claims 6, 7, 11, and 12, each of these claims depends from independent Claim 1. Accordingly, dependent Claims 6, 7, 11, and 12 are novel and nonobvious over Dubin et al. for the same reason that independent Claim 1 is novel and nonobvious over Dubin et al.

Claims 16-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of U.S. Patent No. 5,223,118 to Sonnenberg et al. and U.S. Patent No. 3,770,598 to Creutz. For the following reasons, applicants respectfully traverse this rejection.

Claims 16-21 ultimately depend from independent Claim 1, and accordingly, dependent Claims 16-21 are novel and nonobvious over Dubin et al. for the same reasons that independent

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CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

Claim 1 is novel and nonobvious over Dubin et al. Sonnenberg et al. and Creutz do not supply what is missing from Dubin et al. with respect to independent Claim 1.

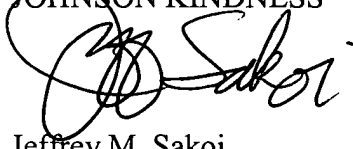
Dependent Claim 32 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of U.S. Patent No. 5,969,422 to Ting et al. For the following reasons, applicants respectfully traverse this rejection.

Claim 32 depends from independent Claim 1, and accordingly, dependent Claim 32 is novel and nonobvious over Dubin et al. for the same reasons that independent Claim 1 is novel and nonobvious over Dubin et al. The secondary Ting et al. reference does not supply what is missing from Dubin et al. with respect to independent Claim 1.

For the foregoing reasons, the pending and active claims are novel and nonobvious over Dubin et al., alone and in combination with the applied secondary references and Anthony as applied in the Examiner's Action. Accordingly, applicants respectfully request that the Examiner withdraw the outstanding rejections and pass the application to issue. If the Examiner has any questions regarding the above, the Examiner is asked to call applicants' attorney at the number listed below so that any outstanding issues can be resolved in a timely and efficient manner.

Respectfully submitted,

CHRISTENSEN O'CONNOR
JOHNSON KINDNESS^{PLLC}



Jeffrey M. Sakoi
Registration No. 32,059
Direct Dial No. 206.695.1713

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Sharon Hill

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS^{PLLC}
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100